



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

h.i.c

551.206
S462a

LIBRARY
C-R.

STANFORD
LIBRARIES



✓ CRANNER EARTH SCIENCES LIBRARY

Seismological Society of America



o cat
o l. c.
Annual Report

SAN FRANCISCO, CAL.
APRIL 1908

551.206
S462a



BOARD OF DIRECTORS—1907

GEORGE DAVIDSON, *President*

ANDREW C. LAWSON, *1st Vice-President*

T. J. J. SEE, *2nd Vice-President*

ALEX. G. MCADIE, *3rd Vice-President*

J. N. LeCONTE, *Treasurer*

GEO. D. LOUDERBACK, *Secretary*

CHAS. BURCKHALTER

G. K. GILBERT

W. W. CAMPBELL

A. O. LEUSCHNER

C. DERLETH, JR.

J. S. RICARD

SCIENTIFIC COMMITTEE

ANDREW C. LAWSON, *Chairman*

JOHN C. BRANNER

J. N. LeCONTE

G. K. GILBERT

A. G. MCADIE

C. DERLETH, JR.

H. F. REID

"For the acquisition and diffusion of knowledge concerning earthquakes and allied phenomena, and to enlist the support of the people and the government in the attainment of these ends."



REPORT OF THE PRESIDENT

In this first year of its organization the Seismological Society of America has increased confidence in the necessity and usefulness of its existence.

We believe the Society can keep the physicist, geologist and geodesist so informed that they will refer to its announcements as authority and that the engineer, architect and builder will apply its information in the design and construction of works of engineering and in the erection of public and private buildings.

The Society has been collecting data of earthquake shocks on this coast and throughout the Pacific and proposes to keep in close relation with institutions, societies and observers who have seismological instruments.

The area of the Pacific Ocean is greater than the exposed land surface of the globe, yet notwithstanding the great extent of this area, information concerning many of the dislocations of its ocean-floor is preserved in two ways other than the usual records of seismographs, namely, by the narrative of persons feeling the shocks received by vessels in the vicinity of dislocations and by the records made upon the marigraph of self-registering tide gauges established at different points on the Pacific Coast.

At San Francisco a number of marigraphic records of great dislocations near Japan, Peru, Chili, Krakatao, Alaska and in regions unknown have been made. For the purpose of gathering and preserving data of this kind the Superintendent of the U. S. Coast & Geodetic Survey has been petitioned on behalf of the Society for an examination of the monthly marigraphs and already some information from this source has been received. The Superintendent was also good enough to express a readiness to afford the Society every facility for making an examination of the marigraphs from 1853 to date. It is hoped that these marigraphic records will enable us to determine whether some



of the disturbances felt on land have their origin in the adjacent ocean bed.

Of course, one serious difficulty attaches to all new organizations of this character and that is the lack of funds for publication but as soon as the Society sees the way clear publications will be undertaken.

A few subscribers who would guarantee fifty dollars each per annum for a few years would assuredly enable the Society to publish regularly.

We earnestly appeal to our friends and to all interested in the subject of our investigations to become members of the Society.

Respectfully submitted,

GEORGE DAVIDSON,

President.

REPORT OF THE SECRETARY

The Seismological Society of America was organized at San Francisco in the fall and winter of 1906 largely as a result of the great earthquake of April 18th of that year. It was then brought forcibly home to us that seismology was a science unorganized, and practically undeveloped in America, that properly equipped seismographic stations were altogether too few and far between, and that there was an unfortunate lack of knowledge among our scientists, architects, engineers, and people in general concerning the mode of action of earthquakes, and the best methods of providing against their more destructive effects. The Society was established to develop organized effort in seismology in America, to collect accurate information concerning earthquakes, to disseminate the truth among the people, to inform them of the methods devised in various countries for the protection of life and property, to replace the element of terror or helplessness which results from imperfect knowledge, by an intellectual interest in natural phenomena and by the taking of reasonable precautions.

Although no part of the continent is proof against the destructive effects of great earthquakes, the Pacific Coastal region is the most active geological province, and it seemed best that the headquarters of the Society should be where the greater opportunities for investigation in the field, and the greater popular needs and interests lie. Early in 1907 the Society was incorporated and San Francisco chosen as its principal place of business.

During the last year the Society has not accomplished what its organizers hoped for and this can be traced very directly to the prevailing financial conditions. The losses following the earthquake and fire of April, 1906 made many withhold their support until later and then the financial depression forced another postponement.

However, a very good start has been made, and a nucleus formed about which we hope to build a strong organization.

At present there is a membership list of 149, an examination of which will show that it contains a good representation of recognized scientists in all parts of the United States and Canada.

The Society is not yet in a position to employ a paid secretary and lack of time and money have prevented canvassing for members on a large scale.

Among those to whose attention the organization and aims of the Society have been brought, the proportion of applications for membership have been high.

In its aim to encourage investigations and disseminate information, the Society desires to establish a regular publication. This matter has been discussed earnestly in the scientific committee and the board of directors and the intention at present is to commence the publication of a quarterly journal as soon as a sufficient fund is on hand to guarantee the publication for a year. By the courtesy of President Wheeler of the University of California, it will be possible to have our journal printed by the University Press at practically cost price. As the dues are so low, the sum available for publication does not grow very fast and it would be very desirable if some of the members could make or obtain donations for a publication guarantee fund. It was our hope of getting contributions to an endowment or guarantee fund that has been affected most by the financial stringency.

However, to further this aim of disseminating information, the Society has used its influence to have its members supplied with whatever publications on Seismology this year have been available. We must thank the United States Geological Survey and Professors McAdie and Marvin of the Weather Bureau for the following, which have been sent out to our members.

Catalogue of Earthquakes of the Pacific Coast, 1897-1906; by A. G. McAdie. Smithsonian Miscell. Coll. Vol. XLIX No. 1721, (1907).

Improvements in Seismographs with Mechanical Registration, by C. F. Marvin. Monthly Weather Review, May 1906

The Mexican Earthquake of April 15, 1907, with notes on

the nature of the movements induced by earthquakes; by C. F. Marvin. *Monthly Weather Review*, April, 1907.

The San Francisco Earthquake and Fire, April, 1906. U. S. Geological Survey. Bulletin No. 324 (1907).

An effort has been made to get copies of the report of the State Earthquake Investigation Commission, (now in press), under some favorable arrangement, for our members. But the present policy of the Carnegie Institution does not permit of compliance with our request. For the benefit of the members of the Society and with the kind permission of the Carnegie Institution, Dr. G. K. Gilbert has kindly consented to prepare an illustrated digest of the report of the State Earthquake Investigation Commission, and a copy will be sent to each of our members.

Among other matters which have received attention during the year are the securing of certain records from the tide-recording gauges of the U. S. Coast and Geodetic Survey and the effort to have tracings systematically made of the marigraphic earthquake records in the possession of that Survey; the collection of reports both on sea and land; and the construction of a cheap but reliable time apparatus. A report upon the best form of seismographs is expected shortly from the committee on instruments, and several institutions have expressed their willingness to install instruments upon the recommendation of the Society. The Society has tried to further the plans for the organization of an institute of seismology under the auspices of the Smithsonian Institution and hopes to be able to co-operate with the International Association of Seismology and the Committee of Seismology of the American Association for the Advancement of Science.

The Society would be pleased to receive gifts of papers or books published by or available through its members and hopes to gradually build up a library on seismology.

Respectfully submitted,

GEORGE D. LOUDERBACK,

Secretary.

MEMBERS 1907-1908

ADAMS, PROFESSOR FRANK D.	McGill University, Montreal, Canada
ADDICOTT, JAMES EDWARD	1831 Peters Ave., New Orleans, La.
ANDERSON, ROBERT	U. S. Geol. Survey, Washington, D. C.
ARANGO, RICARDO M.	Division Engineer, Ancon, Canal Zone, Panama
ARNOLD, DR. RALPH	U. S. Geol. Survey, Washington, D. C.
BALLARD, PROF. C. A.	State Normal School, Moorhead, Minn.
BASCOM, PROF. F.	Bryn Mawr College, Bryn Mawr, Pa.
BAUER, DR. L. A.	Carnegie Institution, Washington, D. C.
BEEDE, DR. J. W.	Bloomington, Illinois
BINGHAM, A. C.	Marysville, California
BLAKE, WM. P.	Mill Rock, New Haven, Conn.
BLANDING, GORDON	Belvedere, Calif.
BOARDMAN, T. D.	508 California St., San Francisco, Calif.
BOGGS, EDWARD M.	708 San Pablo Ave., Oakland, Calif.
BRANNER, PROF. J. C.	Stanford University, Calif.
BUCKNER, CHAS.	917-7th St., East Oakland, Calif.
BUHNE, H. H.	Eureka, Calif.
BURBANK, LUTHER	Santa Rosa, Calif.
BURCKHALTER, CHAS.	Chabot Observatory, Oakland, Calif.
BURNHAM, REV. THEODORE F.	429 Carolina St., Vallejo, Calif.
CAMPBELL, DIRECTOR W. W.	Lick Observatory, Mt. Hamilton, Calif.
CHURCH, PROF. J. E. JR.	Reno, Nevada
COLEMAN, PROF. A. P.	School of Science, Toronto, Ontario
CRANDALL, RODERIC	1027 Bryant St., Palo Alto, Calif.
CROSBY, PROF. W. O.	Mass. Institute of Technology, Boston, Mass.
CROTHERS, GEO. E.	2998 Pacific Ave., San Francisco, Calif.
DAVIDSON, PROF. GEORGE	2221 Washington St., San Francisco
DERLETH, PROF. C., JR.	University of California, Berkeley, Calif.
DILLER, J. S.	U. S. Geol. Survey, Washington, D. C.
DOOLITTLE, PROF. C. L.	Upper Darby, Penn.
DURAND, PROF. F.	Stanford University, Calif.
ECKART, W. R.	3014 Clay St., San Francisco, Calif.
ELLS, CHARLES P.	2415 Pierce St., San Francisco, Calif.
ELDER, JAMES W.	401 California St., San Francisco, Calif.
ETTLER, J. A.	Room 302, 604 Mission St., San Francisco, Calif.
FAIRBANKS, DR. HAROLD W.	Box 376, Berkeley, Calif.
FORBES, JNO. F.	601 Kohl Bldg., San Francisco, Calif.
FOWLER, F. H.	221 Kingsley Ave. Palo Alto, Calif.
FRASER, GUY	2640 Sylvan Way, Berkeley, Calif.
FULLER, M. L.	U. S. Geol. Survey, Washington, D. C.
GILBERT, DR. G. K.	U. S. Geol. Survey, Faculty Club, Berkeley, Calif.
GELDERN, OTTO VON	1978 Broadway, San Francisco, Calif.
GILMAN, C. E.	1368 Geary St., San Francisco, Calif.
HARRIS, PROF. G. D.	Ithaca, New York



Annual Report

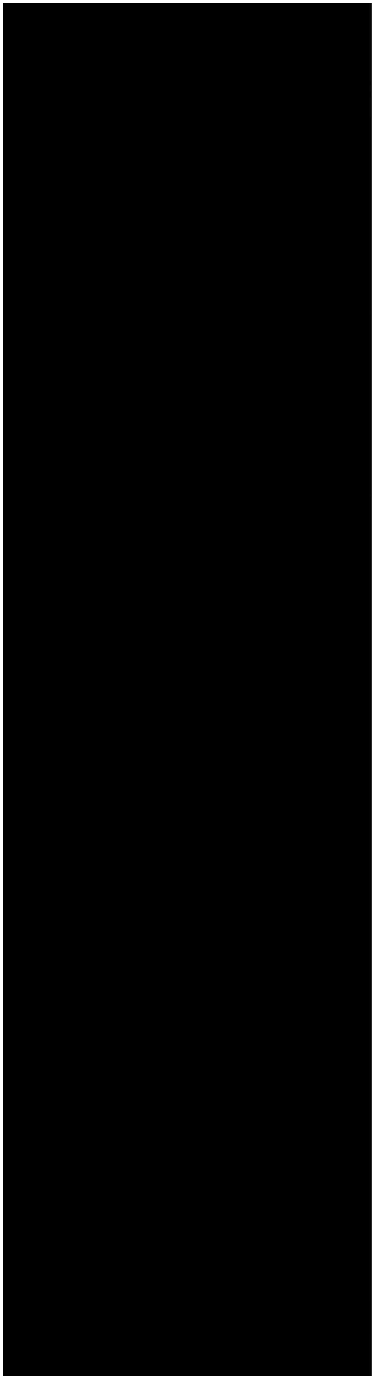
9

HARTZELL, PROF. J. CULVER	University of the Pacific, San Jose, Calif.
*HEILPRIN, PROF. ANGELO	Academy of Na. Science, Phila. Penn.
HERRMANN, A. T.	Theatre Building, San Jose, Calif.
HEREDIA, REV. GUSTAVO, S. J.	P. O. Box 157, Pueblo, Mexico
HITCHCOCK, PROF. C. H.	Hanover, New Hampshire
HITCHCOCK, J	825 Louisiana St., Vallejo, Calif.
HIXON, HIRAM W., (care Mond Nickel Co.)	Victoria Mines, Ontario
HOBBS, PROF. WM. H.	University of Michigan, Ann Arbor, Mich.
HOLMES, HOWARD C.	Room 12, Ferry Bldg. San Francisco, Calif.
HOPKINS, PROF. T. C.	Syracuse University, Syracuse, New York
HOSKINS, PROF. L. M.	365 Lincoln Ave., Palo Alto, Calif.
HOVEY, DR. E. O.	Am. Museum Nat. Hist., New York, N. Y.
HOWE, MISS AGNES E.	State Normal School, San Jose, Calif.
HUMPHREY, RICHARD L.	1001 Harrison Bldg. Philadelphia, Pa.
HUNT, G. J.	827 Capitol St., Vallejo, Calif.
JAGGAR, PROF. T. A., JR.	Institute of Technology, Boston, Mass.
JORDAN, PRESIDENT DAVID S.	Stanford University, Calif.
KEATINGE, RICHARD	779 Market St., San Francisco, Calif.
KEEP, JOSIAH	Mills College, Calif.
KEMP, PROF J. F.	211 West 139 St., New York City
KLOTZ, DR. OTTO	437 Albert St., Ottawa, Canada
KOETITZ, F. A.	17 Spear St., San Francisco, Calif.
LANE, PROF. ALFRED G.	State Geologist, Lansing, Michigan
LANE, F.	Bishop, Calif.
LAWSON, PROF. A. C.	University of California, Berkeley, Calif.
LANDES, PROF. HENRY	University Station, Seattle, Washington
LECONTE, PROF. J. N.	University of California, Berkeley, Calif.
LEIB, JUDGE S. F.	San Jose, Calif.
LEUSCHNER, PROF. A. C.	University of California, Berkeley, Calif.
LEWIS, ROBERT S.	care Warrior Copper Co., Globe, Arizona
LINDLEY, JUDGE CURTIS H.	St. Mungo Bldg., San Francisco, Calif.
LINSLEY, EARLE G.	California College, East Oakland, Calif.
LORING, CONRAD	2250 Telegraph Ave., Berkeley, Calif.
LOUDERBACK, PROF. GEO. D.	University of California, Berkeley, Calif.
LOUGHRIDGE, PROF. R. H.	University of California, Berkeley, Calif.
LYON, PROF. DORSEY A.	Stanford University, Calif.
MC ADIE, PROF. ALEX. G.	U. S. Weather Bureau, San Francisco, Calif.
MC BRYDE, WARREN, H.	Pinole, Calif.
MC DOUGALL, G. B.	721 Devisadero St., San Francisco, Calif.
MARVIN, PROF. C. F.	U. S. Weather Bureau, Washington, D. C.
MATHEWSON, R. H.	Cosmos Club, San Francisco, Calif.
MATTHES, FRANCOIS E.	U. S. Geol. Survey, Washington, D. C.
MEANS, THOMAS H.	U. S. Reclamation Service, Fallon, Nevada
MECHANICS-MERCANTILE LIBRARY	99 Grove St., San Francisco, Calif.
MENDENHALL, W. C.	U. S. Geol. Survey, 515 Merchants Trust Bldg., Los Angeles, Calif.
MEYER, FRED H.	Box 162, San Rafael, Calif.
MILLER, PROF. DAYTON C.	Case School Applied Sci., Cleveland, Ohio
*MILLS, WM. H.	San Francisco, Calif.

*Deceased

MORAN, ROBERT B.	661 Waverly St., Palo Alto, Calif.
MUIR, DR. JOHN	Martinez, Calif.
NEWSOM, PROF. J. F.	Palo Alto, Calif.
NISHKIAN, L. H.	1155 Turk St., San Francisco, Calif.
NUNAN, THOMAS	Examiner Office, San Francisco, Calif.
ODENBACH, REV. F. L.	St. Ignatius College, Cleveland, Ohio
OLNEY, WARREN	481 Prospect Ave., Oakland, Calif.
PAGE, CHARLES	Merchant's Exchange Bldg., San Francisco, Calif.
PHELAN, JAMES D.	Mutual Bank Bldg., San Francisco, Calif.
PICKERING, PROF. WM. H.	Harvard Observatory, Cambridge, Mass.
POSS, V. H.	832 Clayton St., San Francisco, Calif.
PROSSER, PROF. CHAS. S.	Ohio State Univ., Columbus, Ohio
RALSTON, J. C.	2421 West Mission Ave., Spokane, Wash.
RICARD, REV. JEROME S., S. J.	Santa Clara College, Santa Clara, Calif.
RICE, PROF. WM. NORTH	Middletown, Conn.
RICKARD, T. A.	2334 LeConte Ave., Berkeley, Calif.
RIES, PROF. HEINRICH	Cornell University, Ithaca, New York
RODGERS, W. S.	Boulder Creek, Calif.
ROGERS, PROF. F. J.	Stanford University, Calif.
ROLFE, F.	1631 Council St., Los Angeles, Calif.
ROCKWOOD, PROF. C. G. JR.	34 Bayard Lane, Princeton, N. J.
RUDDOCK, GEORGE T.	853 Page St., San Francisco, Calif.
RUSHMER, CLIFF B.	117 Geary St., San Francisco, Calif.
RYAN, DANIEL A.	1900A Fillmore St., San Francisco, Calif.
RYAN, PROF. HARRIS J.	Stanford University, Calif.
SAMPSON, ALDEN	2223 Atherton St., Berkeley, Calif.
SIMONDS, ERNEST H.	787 Market St., Room 230, San Francisco, Calif.
SCHRADER, GUSTAVE	Box 5, Sutter Creek, Calif.
SCHULZ, JNO.	779 Market St., San Francisco, Calif.
SCHULZE, H. A.	604 Mission St., San Francisco, Calif.
SEARLE, REV. GEO. M.	St. Thomas' College, Catholic University, Brookland, D. C.
SEE, PROF. T. J. J.	U. S. Naval Observatory, Mare Island, Calif.
SHEPHERD, A. D.	1592 Geary St., San Francisco, Calif.
SNYDER, IRVING H.	Los Gatos, Calif.
STANFORD, JOSIAH W.	Warm Springs, Alameda Co., Calif.
STEBBINS, C. S.	1230 Parkwild Ave., Omaha, Nebraska
STRONG, A. M.	Bishop, Calif.
STUBBS, PRESIDENT J. E.	University of Nevada, Reno, Nevada
TABER, STEPHEN	Minillas, Estado de Zacatecas, Mexico
TARR, PROF. RALPH S.	Cornell University, Ithaca, New York
TAYLOR, FRANK B.	548 Home Ave., Fort Wayne, Indiana
TERRILL, ARTHUR C.	University of Oregon, Eugene, Oregon
TOWNLEY, PROF. S. D.	575 Lincoln Ave., Palo Alto, Calif.
UHLIG, CARL	16 Ferry Bldg., San Francisco, Calif.
VAN HISE, PRESIDENT C. R.	University of Wis., Madison, Wisconsin
VOLZ, F. W.	Canyon Diablo, Arizona
WAGONER, LUTHER	2938 Webster St., San Francisco, Calif.
WARING, G. A.	Stanford University, Calif.
WILBUR, DR. R. L.	Stanford University, Calif.

WILLIAMS, DR. T. M.	351 Homer Av., Palo Alto, Calif.
WINCHELL, PROF. N. H.	113 State St., Minneapolis, Minn.
WOOD, HARRY O.	South Hall, Univ. of Calif. Berkeley, Calif.
WOODWORTH, PROF. J. B.	care University Museum, No. 7 Rutland St., Cambridge, Mass.
WRIGHT, CAREY T.	Redlands High School, Redlands, Calif.
WRIGHT, G. A.	571 California St., San Francisco, Calif.
YOUNG, PROF. GEO. J.	839 Lake St., Reno, Nevada
ZOFFMANN, GEO. F.	Chimipas, Chih. Mexico



10/10/10

10/10/10

